

**What is claimed is:**

1. A pulverulent composition for processing in a process for the layer-by-layer build-up of three-dimensional objects by selectively bonding portions of the powder to one another,

5 wherein

the powder comprises at least one polymer and at least one flame retardant comprising ammonium polyphosphate and has a maximum particle size of  $\leq 150 \mu\text{m}$ .

2. The powder as claimed in claim 1,

10 wherein

the polymer was prepared by milling, precipitation, and/or anionic polymerization, or by a combination of these, or by subsequent fractionation.

3. The powder as claimed in claim 1 or 2,

15 wherein

the polymer is a homo- or copolymer selected from polyester, polyvinyl chloride, polyacetal, polypropylene, polyethylene, polystyrene, polycarbonate, poly-(N-methylmethacrylimides) (PMMI), polymethyl methacrylate (PMMA), ionomer, polyamide, copolyester, copolyamides, terpolymers, acrylonitrile-butadiene-styrene 20 copolymers (ABS), or is a mixture of these.

4. The powder as claimed in at least one of claims 1 to 3,

which

25 comprises a nylon-6,12, nylon-11, or nylon-12, or copolyamides based on the aforementioned polyamides.

5. The powder as claimed in at least one of claims 1 to 4,

wherein

the polymer has a melting point of from 50 to 350°C.

30

6. The powder as claimed in claim 5,

wherein

the polymer has a melting point of from 70 to 200°C.

7. The powder as claimed in at least one of claims 1 to 6,

5 which

has a median particle size of from 20 to 100 µm.

8. The powder as claimed in at least one of claims 1 to 7,

which

10 also comprises at least one auxiliary and/or at least one filler, and/or at least one pigment.

9. The powder as claimed in claim 8,

which

comprises flow aid as auxiliary.

15

10. The powder as claimed in any of claims 1 to 9,

wherein

the ammonium polyphosphate contains from 10 to 35% by weight of phosphorus.

20 11. The powder as claimed in any of claims 1 to 10,

wherein

the flame retardant component comprises synergists alongside the ammonium polyphosphate.

25 12. The powder as claimed in any of claims 1 to 11,

which

comprises the flame retardant component in pulverulent form with a median particle size of from 1 to 50 µm.

30 13. The powder as claimed in any of claims 1 to 12,

wherein

the flame retardant component is in pulverulent and coated form.

14. The sinter powder as claimed in any of claims 1 to 13,

which,

5 based on the entirety of polyamides present in the powder, comprises from 0.01 to 30% by weight of metal soap.

15. The sinter powder as claimed in claim 14,

which,

10 based on the entirety of polyamides present in the powder, comprises from 0.5 to 15% by weight of metal soap.

16. The sinter powder as claimed in any of claims 1 to 14,

which

15 comprises fine metal soap particles mixed with polyamide particles.

17. The sinter powder as claimed in any of claims 1 to 14,

which

comprises metal soaps incorporated within polyamide particles.

20

18. The sinter powder as claimed in at least one of claims 1 to 17,

wherein

the metal soaps are the alkali metal or alkaline earth metal salts of the underlying alkanemonocarboxylic acids or dimer acids.

25

19. The sinter powder as claimed in at least one of claims 1 to 18,

wherein

the metal soaps are the sodium or calcium salts of the underlying alkanimonocarboxylic acids or dimers acids.

30

20. A process for preparing powder as claimed in at least one of claims 1 to 19,

which comprises  
mixing at least one polymer with a flame retardant comprising ammonium polyphosphate.

21. The process as claimed in claim 14,

5       wherein

polymer powder obtained by reprecipitation or milling is mixed in a dry blend process  
with the flame retardant comprising ammonium polyphosphate.

22. The process as claimed in claim 14,

10      wherein

the flame retardant comprising ammonium polyphosphate is compounded into a melt of  
polymer, and the resultant mixture is processed by milling to give powder.

23. The use of powders as claimed in at least one of claims 1 to 13 for producing moldings by

15       a layer-by-layer process which selectively bonds the powder.

24. The use as claimed in claim 17,

wherein

20       moldings are produced by selective laser sintering, selective inhibition of the bonding of  
powders, 3D printing, or a microwave process.

25. A molding, produced by a process for the layer-by-layer build-up of three-dimensional  
objects by selectively bonding portions of a powder to one another,

which

comprises at least one flame retardant comprising ammonium polyphosphate and  
25       comprises at least one polymer.

26. The molding as claimed in claim 19,

which

30       comprises a polyamide which contains at least 8 carbon atoms per carboxamide group.

27. The molding as claimed in claim 19 or 20,

which

comprises nylon-6,12, nylon-11 and/or nylon-12, or copolyamides based on these polyamides.

5

28. The molding as claimed in any of claims 19 to 21,

which,

based on the entirety of the components present, comprises from 5 to 50% by weight of flame retardant comprising ammonium polyphosphate.

10

29. The molding as claimed in claim 22,

which,

based on the entirety of the polymers present, comprises from 30 to 35% by weight of flame retardant comprising ammonium polyphosphate.

15

30. The molding as claimed in at least one of claims 19 to 23,

which

comprises fillers and/or pigments.

20 31. The molding as claimed in any of the preceding claims,

which,

based on the entirety of the polyamides present in the powder, comprises from 0.01 to 30% by weight of metal soap.

25 32. The molding as claimed in any of the preceding claims,

which,

based on the entirety of the polyamides present in the powder, comprises from 0.5 to 15% by weight of metal soap.

30 33. The molding as claimed in any of the preceding claims,

which

comprises fine metal soap particles mixed with polyamide particles.

34. The molding as claimed in any of the preceding claims,

wherein

5 the powder comprises metal soaps incorporated within polyamide particles.

35. The molding as claimed in any of the preceding claims,

wherein

the metal soaps are the alkali metal or alkaline earth metal salts of the underlying  
10 alkanemonocarboxylic acids or dimer acids.

36. The molding as claimed in any of the preceding claims,

wherein

the metal soaps are the sodium or calcium salts of the underlying alkanemonocarboxylic  
15 acids or dimer acids.